

Rohde & Schwarz® Products:
R&S® FSL3, R&S® FSL6, R&S® FSL18

Remote Monitoring and Control of the R&S® FSL with a Web Browser

Application Note

This application notes describes remote operation or monitoring of the spectrum analyzers R&S® FSL3, R&S® FSL6, R&S® FSL18 through a standard web browser.

The common cross-platform technology Virtual Network Computing (VNC) is used as a server on the instrument.



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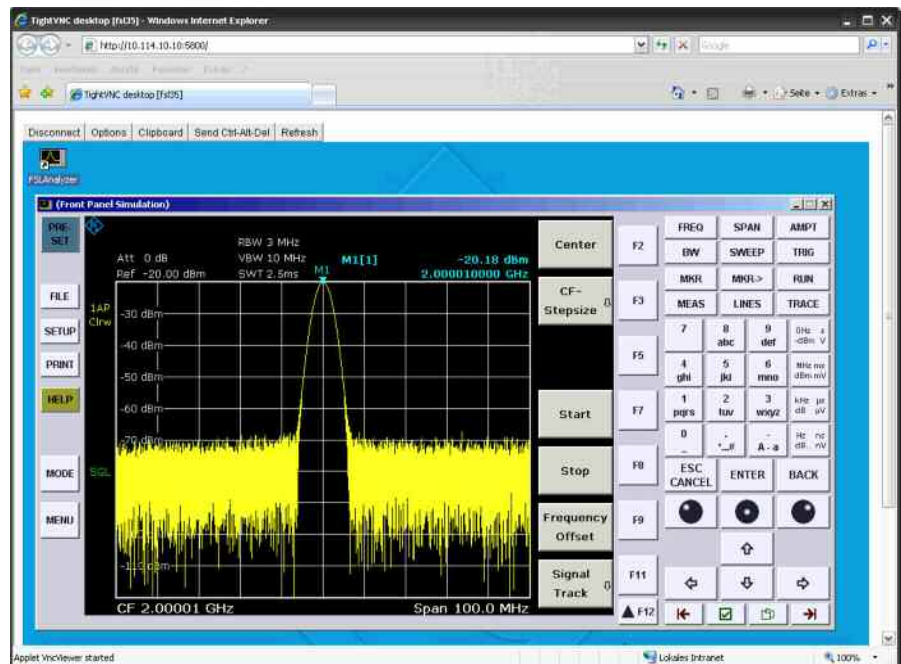
1 Introduction

The LAN network interface of instruments opens a whole new field of applications in the area of remote monitoring and control. In contrast to the common IEEE-488 bus (GPIB), where the cable length was rather limited, the network interface virtually makes distance between instrument and operator boundless. Windows XP based R&S instruments already provide a solution for remote access by means of Remote Desktop. This solution however, is limited to one user and the measurement graphics is shown either on the instrument or on the remote display but not on both simultaneously.

This application note describes an approach with VNC (Virtual Network Computing) that allows multiple clients to access the same instrument at the same time. The measurement graphics is still available on the instrument screen. Possible access conflicts during simultaneous control from multiple clients remains however the responsibility of the user(s).

The R&S® FSL spectrum analyzers can be controlled remotely via the web browser interface. This browser interface displays the so-called soft front panel which consists of the front panel keys and the measurement screen.

All keys (including soft keys) can be operated by a mouse click in the browser window.



To use these capabilities the VNC Server software has to be installed on the R&S® FSL spectrum analyzer.

On the client PC there's no need to install any software or driver - just use an Internet browser like Internet Explorer 7 (IE7) with Java script enabled.

Only the IP address of the analyzer is required to access the instrument. The IP address can be found by pressing the SETUP key on the analyzer front panel and then selecting the soft key menu:

'General Setup' ⇒ 'Network Address' ⇒ 'IP Address'.

The operation with VNC applies to all R&S® FSL spectrum analyzers equipped with a DVI connector on the rear panel:



Only these instruments are equipped with the appropriate graphics chip and driver.

Caution

Do not use VNC with instruments without a DVI connector on the rear panel. This may result in a dark instrument screen, which cannot be recovered.

2 VNC Installation on the Instrument

VNC is an Open Source software, the version which is tested and highly recommended to use is called TightVNC. It can be downloaded from

<http://www.tightvnc.com/>

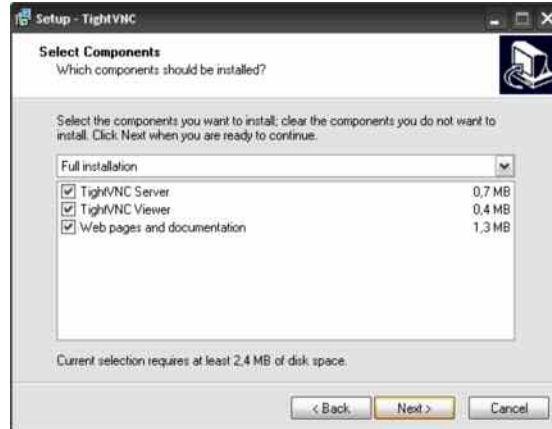
for Windows platforms. Copy the file “tightvnc-1.3.9-setup.exe” on a USB stick. The installation is straight forward and does not present critical installation options. For convenience the installation steps are listed below:

1. Connect an external keyboard and mouse to the instrument.
2. Select CTRL & ESC to bring up the Windows START menu and start the Explorer.
3. Select the directory on the USB stick where the TightVNC EXE is located.
4. Start the installation by double-clicking on the EXE file.

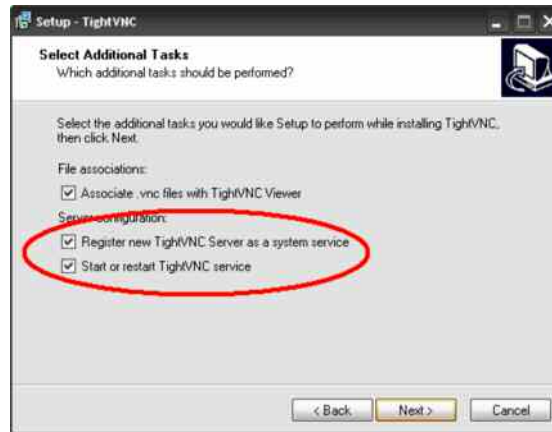


5. Read and accept the license agreement by pressing the “Next” Button.

6. Select destination folder, select the Start Menu Folder and select the features to be installed according to the following figure:



7. Register and start VNC as a Windows service:



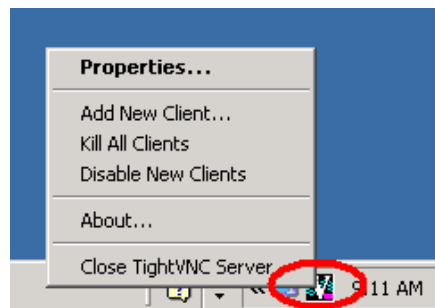
For automatic startup the VNC software should be installed as a Windows service.

After installation of the VNC on the R&S® FSL a reboot of the instrument is required.

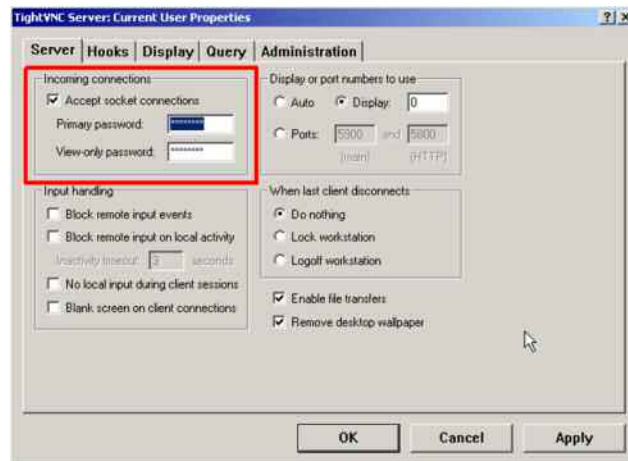
Configuration of the TightVNC Settings

After successful installation configure the VNC settings.

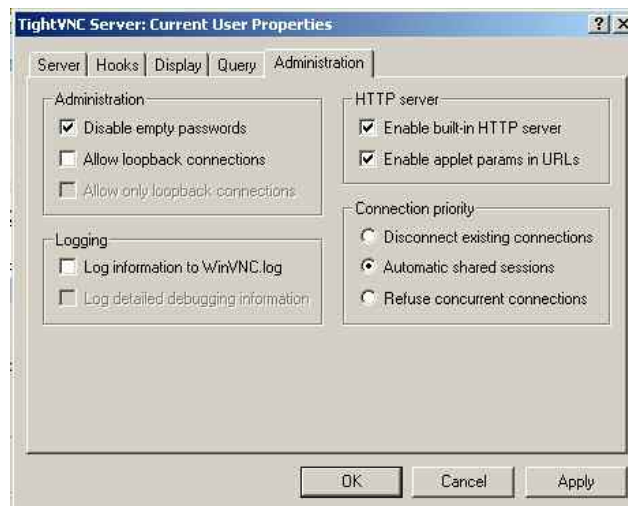
Select CTRL & ESC to bring up the Windows START menu and the Windows status bar. Right-Click on the VNC icon and then on 'Properties...'



Define a password of your choice in the authentication field:



Set the following features under the “Administration” Tab:



Press 'OK' to confirm the changes.

3 Optimizing the Screen Update Rate

To significantly improve the screen update rate for the measurement results use the DFMirage driver in addition to TightVNC. It can be downloaded from:

<http://www.demoforge.com/dfmirage.htm>

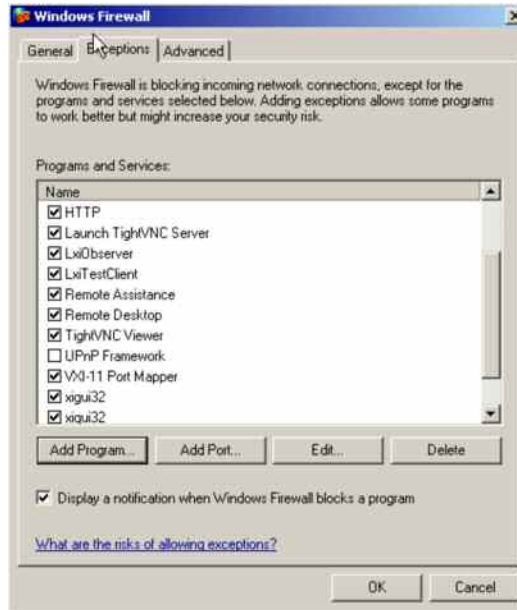
Copy the file “dfmirage-setup-1.1.68.2.exe” on a USB stick. The installation is straight forward and does not present any installation options.

1. Connect an external keyboard and mouse to the instrument.
2. Select CTRL & ESC to bring up the Windows START menu and start the Explorer.
3. Select the directory on the USB stick where the “dfmirage-setup-1.1.68.2.exe” is located.
4. Start the installation by double-clicking on the EXE file.

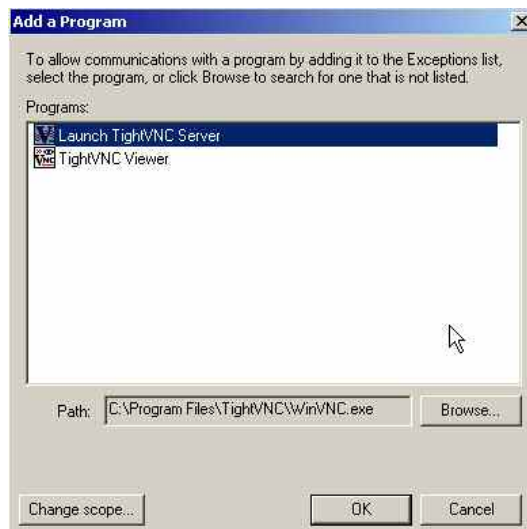
4 Changing the Firewall Settings

In order to access the VNC server on the R&S® FSL the firewall settings have to be adjusted to allow communication with the PC client.

1. Connect an external keyboard and mouse to the instrument.
2. Select CTRL & ESC to bring up the Windows START menu and then select Settings ⇒ Control Panel ⇒ Windows Firewall.



3. Select the 'Exceptions' Tab and then use the 'Add Program..' Button to allow the TightVNC Server and Viewer to be accessed through the firewall.



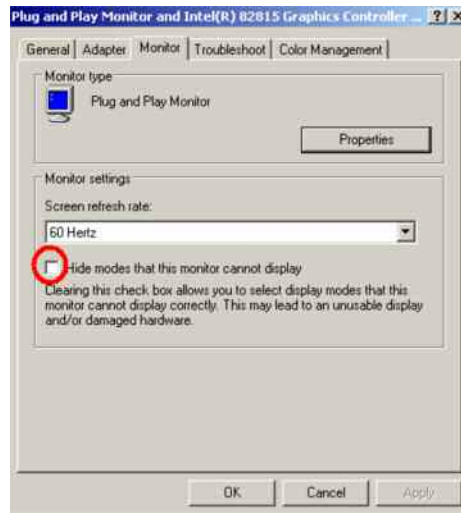
Press 'OK' to confirm the changes.

5 Changing the Instrument Screen Resolution

In order to display the soft front panel on the instrument and in the browser, a higher display resolution for the additional front panel area to be displayed is required.

The increased resolution can only be activated if the graphics driver of the R&S® FSL is configured to allow higher resolutions w/o external monitor.

1. Select CTRL & ESC to bring up the Windows START menu and then select Settings ⇒ Control Panel ⇒ Display.
2. Select the 'Settings' Tab in the Display dialog and then the 'Advanced...' Button.
3. In the 'Advanced Settings' dialog click on the 'Monitor' Tab and then enable all the monitor modes by de-selecting the 'Hide modes that the monitor cannot display' feature:

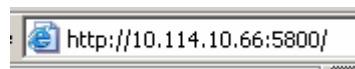


Press 'OK' to confirm the changes.

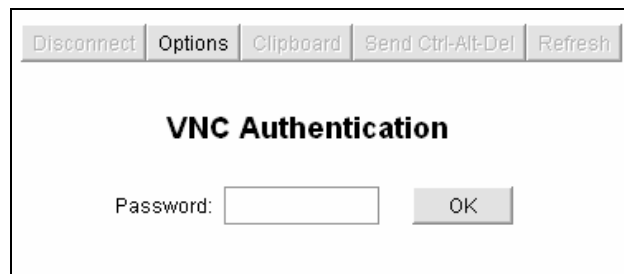
6 Starting the Soft Front Panel from the Browser

The client computer does not require the installation of a dedicated VNC client software.

By default, VNC uses port 5800. In a web browser window type the IP address of the instrument and the VNC port number:



The VNC authentication dialog comes up:



Remote Monitoring and Control with VNC

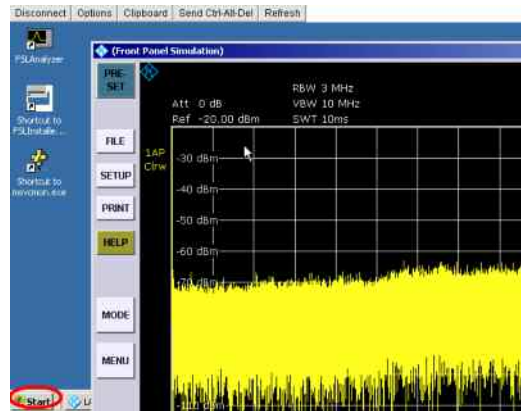
Type in the password that was defined during VNC installation and configuration. The browser window will open and run the java applet showing the instrument firmware application.

Important:

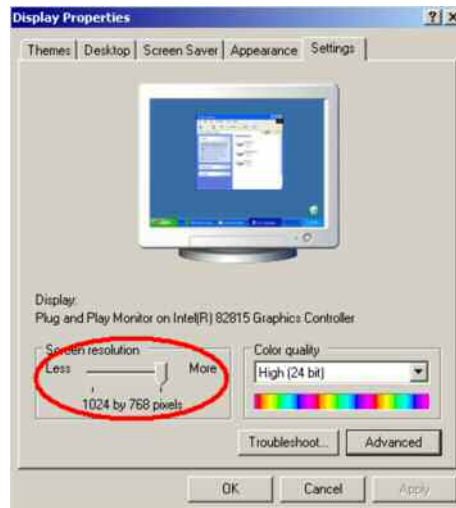
To activate the soft front panel press 'F6' on the PC keyboard.

The soft front panel should now be visible on the screen. To change the screen resolution to make the soft front panel completely visible

1. Move the soft front panel window by dragging the title bar with the mouse to make the Windows START button visible:



2. Select the Windows START menu and then select Settings ⇒ Control Panel ⇒ Display
3. Select the 'Settings' Tab in the 'Display' dialog and change the screen resolution to '1024 by 768':



Press 'OK' to confirm the changes.

If the screen resolution of the browser window doesn't show the full panel press 'Refresh' for the browser and/or log-in again. From now on the resolution should match to show the complete soft front panel in the browser window.



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